

**Dr. Duke's Phytochemical and Ethnobotanical Database**

**Chemicals Found in *Boswellia serrata***

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	(+)-ALPHA-PHELLANDRENE	Essential Oil	--	--		
0	(+)-LIMONENE	Essential Oil	--	45000	1	
0	11-KETO-BETA-BOSWELLIC-ACID	Resin, Exudate, Sap	--	23058	0.9999999999999999	
0	2-ALPHA-3-ALPHA-DIHYDROXY-URS-12-EN-24-OIC-ACID	Resin, Exudate, Sap	--	--		
0	3-ALPHA-HYDROXY-URS-9-12-DIEN-24-OIC-ACID	Resin, Exudate, Sap	--	--		
0	3-ALPHA-HYDROXYTIRUCALL-8,24-DIEN-21-OIC-ACID	Resin, Exudate, Sap	--	--		Sabinsa: A series of well documented proprietary PR booklets, e.g.Sabinsa Corps. 1998. Bronchial Asthma - Its etiology and control with traditional herbal extracts. Sabinsa Corporation. Piscataway, NJ. 49 pp.
0	3-BETA-HYDROXYTIRUCALL-8,24-DIEN-21-OIC-ACID	Resin, Exudate, Sap	--	--		Sabinsa: A series of well documented proprietary PR booklets, e.g.Sabinsa Corps. 1998. Bronchial Asthma - Its etiology and control with traditional herbal extracts. Sabinsa Corporation. Piscataway, NJ. 49 pp.

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	3-KETOTIRUCALL-8,24-DIEN-21-OIC-ACID	Resin, Exudate, Sap	--	--		Sabinsa: A series of well documented proprietary PR booklets, e.g.Sabinsa Corps. 1998. Bronchial Asthma - Its etiology and control with traditional herbal extracts. Sabinsa Corporation. Piscataway, NJ. 49 pp.
0	3-O-ACETYL-11-KETO-BETA-BOSWELLIC-ACID	Resin, Exudate, Sap	--	550		
0	3-O-ACETYL-BETA-BOSWELLIC-ACID	Resin, Exudate, Sap	--	150		
4	ACETYL-11-KETO-BETA-BOSWELLIC-ACID	Resin, Exudate, Sap	--	--		
5	ACETYL-BETA-BOSWELLIC-ACID	Resin, Exudate, Sap	--	--		
10	ALPHA-AMYRIN	Resin, Exudate, Sap	--	--		
10	ALPHA-BOSWELLIC-ACID	Resin, Exudate, Sap	--	--		Sabinsa: A series of well documented proprietary PR booklets, e.g.Sabinsa Corps. 1998. Bronchial Asthma - Its etiology and control with traditional herbal extracts. Sabinsa Corporation. Piscataway, NJ. 49 pp.
10	ALPHA-BOSWELLIC-ACID	Essential Oil	--	--		
0	ALPHA-CAMPHOLENIC-ACID	Essential Oil	--	--		
0	ALPHA-CAMPHOLYTIC-ACID	Essential Oil	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
11	ALPHA-PHELLANDRENE	Resin, Exudate, Sap	--	--		Sabinsa: A series of well documented proprietary PR booklets, e.g.Sabinsa Corps. 1998. Bronchial Asthma - Its etiology and control with traditional herbal extracts. Sabinsa Corporation. Piscataway, NJ. 49 pp.
28	ALPHA-PINENE	Essential Oil	--	--		
28	ALPHA-PINENE	Resin, Exudate, Sap	--	9920	-1.1654001321985943	Sabinsa: A series of well documented proprietary PR booklets, e.g.Sabinsa Corps. 1998. Bronchial Asthma - Its etiology and control with traditional herbal extracts. Sabinsa Corporation. Piscataway, NJ. 49 pp.
13	ALPHA-TERPINENE	Essential Oil	--	--		
0	ALPHA-THUJENE	Essential Oil	--	500000	2.8262426673204106	
0	ALPHA-THUJENE	Resin, Exudate, Sap	--	80000	-1	Sabinsa: A series of well documented proprietary PR booklets, e.g.Sabinsa Corps. 1998. Bronchial Asthma - Its etiology and control with traditional herbal extracts. Sabinsa Corporation. Piscataway, NJ. 49 pp.

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	ARABINOSE	Resin, Exudate, Sap	--	--		Sabinsa: A series of well documented proprietary PR booklets, e.g.Sabinsa Corps. 1998. Bronchial Asthma - Its etiology and control with traditional herbal extracts. Sabinsa Corporation. Piscataway, NJ. 49 pp.
0	BASSORIN	Resin, Exudate, Sap	--	--		Sabinsa: A series of well documented proprietary PR booklets, e.g.Sabinsa Corps. 1998. Bronchial Asthma - Its etiology and control with traditional herbal extracts. Sabinsa Corporation. Piscataway, NJ. 49 pp.
9	BETA-AMYRIN	Resin, Exudate, Sap	--	--		
9	BETA-BOSWELLIC-ACID	Resin, Exudate, Sap	--	63386	0.9999999999999999	
9	BETA-BOSWELLIC-ACID	Essential Oil	--	--		
3	BETA-PHELLANDRENE	Essential Oil	--	--		
13	BETA-PINENE	Resin, Exudate, Sap	--	--		Sabinsa: A series of well documented proprietary PR booklets, e.g.Sabinsa Corps. 1998. Bronchial Asthma - Its etiology and control with traditional herbal extracts. Sabinsa Corporation. Piscataway, NJ. 49 pp.
13	BETA-PINENE	Essential Oil	--	62000	0.6462841768599185	

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
47	BETA-SITOSTEROL	Bark	--	--		Sabinsa: A series of well documented proprietary PR booklets, e.g.Sabinsa Corps. 1998. Bronchial Asthma - Its etiology and control with traditional herbal extracts. Sabinsa Corporation. Piscataway, NJ. 49 pp.
0	BORNEOL-ACETATE	Essential Oil	--	--		
0	BOSWELLIA-4-O-METHYL-GLUCURONOARABINOGLACTAN	Inflorescence	--	--		
30	BOSWELLIC-ACID	Resin, Exudate, Sap	--	--		
4	CADINENE	Essential Oil	--	40000	1.396804651753834	
4	CADINENE	Resin, Exudate, Sap	--	6400		Sabinsa: A series of well documented proprietary PR booklets, e.g.Sabinsa Corps. 1998. Bronchial Asthma - Its etiology and control with traditional herbal extracts. Sabinsa Corporation. Piscataway, NJ. 49 pp.
9	CAMPHENE	Essential Oil	--	--		
0	CIS-10-THUJANIC-ACID	Essential Oil	--	--		
0	D-FRUCTOSE	Plant	--	--		
0	D-GALACTOSE	Plant	--	--		
1	D-GLUCOSE	Plant	--	--		
0	D-LACTOSE	Plant	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
19	D-LIMONENE	Essential Oil	--	45000	0.8498619428795502	Jim Duke's personal files.
19	D-LIMONENE	Resin, Exudate, Sap	--	7200		Sabinsa: A series of well documented proprietary PR booklets, e.g.Sabinsa Corps. 1998. Bronchial Asthma - Its etiology and control with traditional herbal extracts. Sabinsa Corporation. Piscataway, NJ. 49 pp.
7	DIPENTENE	Resin, Exudate, Sap	--	--		Sabinsa: A series of well documented proprietary PR booklets, e.g.Sabinsa Corps. 1998. Bronchial Asthma - Its etiology and control with traditional herbal extracts. Sabinsa Corporation. Piscataway, NJ. 49 pp.
7	DIPENTENE	Essential Oil	--	--		
2	ELEMOL	Resin, Exudate, Sap	--	2080		Sabinsa: A series of well documented proprietary PR booklets, e.g.Sabinsa Corps. 1998. Bronchial Asthma - Its etiology and control with traditional herbal extracts. Sabinsa Corporation. Piscataway, NJ. 49 pp.
2	ELEMOL	Essential Oil	--	12000	-1	

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	EO	Resin, Exudate, Sap	--	160000	0.16915880770206396	Sabinsa: A series of well documented proprietary PR booklets, e.g.Sabinsa Corps. 1998. Bronchial Asthma - Its etiology and control with traditional herbal extracts. Sabinsa Corporation. Piscataway, NJ. 49 pp.
12	ESTRAGOLE	Essential Oil	--	20000	-1.7240124631383356	
8	FRUCTOSE	Resin, Exudate, Sap	--	--		Sabinsa: A series of well documented proprietary PR booklets, e.g.Sabinsa Corps. 1998. Bronchial Asthma - Its etiology and control with traditional herbal extracts. Sabinsa Corporation. Piscataway, NJ. 49 pp.
1	GALACTOSE	Resin, Exudate, Sap	--	--		Sabinsa: A series of well documented proprietary PR booklets, e.g.Sabinsa Corps. 1998. Bronchial Asthma - Its etiology and control with traditional herbal extracts. Sabinsa Corporation. Piscataway, NJ. 49 pp.
8	GAMMA-BOSWELLIC-ACID	Resin, Exudate, Sap	--	--		Sabinsa: A series of well documented proprietary PR booklets, e.g.Sabinsa Corps. 1998. Bronchial Asthma - Its etiology and control with traditional herbal extracts. Sabinsa Corporation. Piscataway, NJ. 49 pp.
0	GERANIC-ACID	Essential Oil	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
35	GERANIOL	Essential Oil	--	8000	-0.590948793183161	
35	GERANIOL	Resin, Exudate, Sap	--	1280		Sabinsa: A series of well documented proprietary PR booklets, e.g.Sabinsa Corps. 1998. Bronchial Asthma - Its etiology and control with traditional herbal extracts. Sabinsa Corporation. Piscataway, NJ. 49 pp.
7	GLUCOSE	Resin, Exudate, Sap	--	--		Sabinsa: A series of well documented proprietary PR booklets, e.g.Sabinsa Corps. 1998. Bronchial Asthma - Its etiology and control with traditional herbal extracts. Sabinsa Corporation. Piscataway, NJ. 49 pp.
4	GLUCURONIC-ACID	Resin, Exudate, Sap	--	--		Sabinsa: A series of well documented proprietary PR booklets, e.g.Sabinsa Corps. 1998. Bronchial Asthma - Its etiology and control with traditional herbal extracts. Sabinsa Corporation. Piscataway, NJ. 49 pp.
0	HEMICELLULOSE	Wood	--	--		
0	IDOSE	Resin, Exudate, Sap	--	--		Sabinsa: A series of well documented proprietary PR booklets, e.g.Sabinsa Corps. 1998. Bronchial Asthma - Its etiology and control with traditional herbal extracts. Sabinsa Corporation. Piscataway, NJ. 49 pp.

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	L-SORBOSE	Plant	--	--		
7	LAURIC-ACID	Essential Oil	--	--		
60	LIMONENE	Essential Oil	--	--		
53	LINALOOL	Essential Oil	--	15000	-0.5158876661912609	
6	METHYL-CHAVICOL	Resin, Exudate, Sap	--	--		Sabinsa: A series of well documented proprietary PR booklets, e.g.Sabinsa Corps. 1998. Bronchial Asthma - Its etiology and control with traditional herbal extracts. Sabinsa Corporation. Piscataway, NJ. 49 pp.
22	MYRCENE	Essential Oil	--	--		
0	MYRTENIC-ACID	Essential Oil	--	--		
0	O-ACETYL-BETA-BOSWELLIC-ACID	Resin, Exudate, Sap	--	--		Hairfield, E. M., Hairfield Jr., H. H., McNair, H. M. 1989. GC, GC/MS, and TLC of Beta-Boswellic Acid and O-Acetyl-Beta-Boswellic Acid from B. serrata, B. cartei, and B. papyrifera. J. Chromatogr. Sci. 27 3: 127-133.
16	P-CYMENE	Essential Oil	--	140000	0.522446086716829	
16	P-CYMENE	Resin, Exudate, Sap	--	22400	-1	Sabinsa: A series of well documented proprietary PR booklets, e.g.Sabinsa Corps. 1998. Bronchial Asthma - Its etiology and control with traditional herbal extracts. Sabinsa Corporation. Piscataway, NJ. 49 pp.

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
13	PALMITIC-ACID	Essential Oil	--	--		
1	RAFFINOSE	Plant	--	--		
0	RHAMNOSE	Resin, Exudate, Sap	--	--		Sabinsa: A series of well documented proprietary PR booklets, e.g.Sabinsa Corps. 1998. Bronchial Asthma - Its etiology and control with traditional herbal extracts. Sabinsa Corporation. Piscataway, NJ. 49 pp.
0	SERRATOL	Resin, Exudate, Sap	--	--		Sabinsa: A series of well documented proprietary PR booklets, e.g.Sabinsa Corps. 1998. Bronchial Asthma - Its etiology and control with traditional herbal extracts. Sabinsa Corporation. Piscataway, NJ. 49 pp.
23	TERPINEN-4-OL	Essential Oil	--	--		
18	TERPINEOL	Resin, Exudate, Sap	--	--		Sabinsa: A series of well documented proprietary PR booklets, e.g.Sabinsa Corps. 1998. Bronchial Asthma - Its etiology and control with traditional herbal extracts. Sabinsa Corporation. Piscataway, NJ. 49 pp.
18	TERPINEOL	Essential Oil	--	10000	1	
2	TERPINEOL-ACETATE	Essential Oil	--	35000		
0	TRANS-10-THUJANIC-ACID	Essential Oil	--	--		

Activity Count	Chemical	Plant Part	Low PPM	High PPM	StdDev	Reference Citation
0	URS-12-ENE-3-ALPHA-24-DIOL	Resin, Exudate, Sap	--	--		